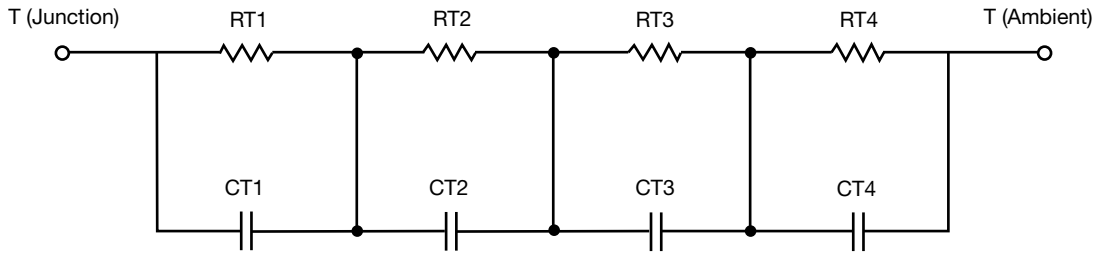
R-C Thermal Model Parameters

DESCRIPTION

The parametric values in the R-C thermal model have been derived using curve-fitting techniques. R-C values for the electrical circuit in the Foster/tank and Cauer/filter configurations are included. When implemented in PSpice, these values have matching characteristic curves to the single-pulse transient thermal impedance curves for the MOSFET.

These RC values can be used in the PSpice simulation to evaluate the thermal behavior of the MOSFET junction temperature under a defined power profile. These techniques are described in application note AN609, “Thermal Simulation of Power MOSFETs on the PSpice Platform”.

R-C THERMAL MODEL FOR TANK CONFIGURATION



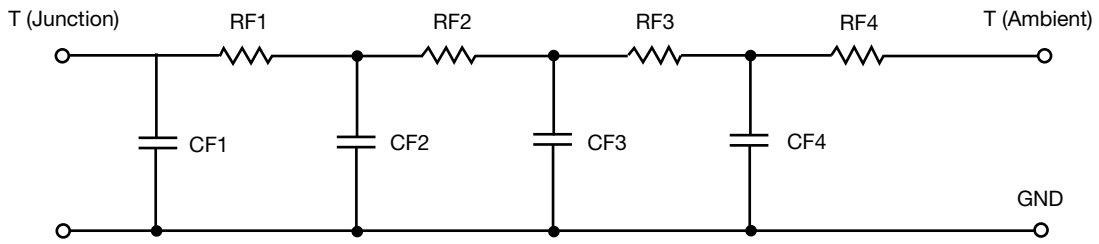
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	3.3029	995.5221m	n/a
RT2	12.5577	861.9779m	n/a
RT3	13.9898	1.5658	n/a
RT4	51.1496	1.1767	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	2.9503m	18.1625m	n/a
CT2	16.0156m	429.7515u	n/a
CT3	136.5597m	9.3280m	n/a
CT4	1.2566	5.2568m	n/a

Note

- n/a indicates not applicable

This document is intended as a SPICE modeling guideline and does not constitute a commercial product datasheet. Designers should refer to the appropriate datasheet of the same number for guaranteed specification limits.

R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	4.6613	451.9000m	n/a
RF2	14.6117	1.2044	n/a
RF3	14.6854	1.7085	n/a
RF4	47.0416	1.2352	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	2.4888m	352.7310u	n/a
CF2	11.7823m	383.1557u	n/a
CF3	147.7955m	3.6349m	n/a
CF4	1.2150	273.0031u	n/a

Note

- n/a indicates not applicable